

HERPETOLOGICAL NOTES.

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(Plates I—IV, text-figures 1—7.)

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THE present paper consists of notes on, and descriptions and redescriptions of, new or little known Reptiles and Batrachians from Australia and New Guinea, based mainly on specimens in the collection of the Australian Museum. The 'notes' mostly consist of additions to the faunæ of the different States of Australia and New Guinea, together with remarks on affinities and distribution. There are four new species and two new varieties proposed.

The following species are dealt with:—

- Austrochaperina brevipes*, sp. nov.
- Limnodynastes tasmaniensis*, Gthr.
- „ *platycephalus*, Gthr.
- „ *fletcheri*, Blgr.
- „ *olivaceus*, de Vis.
- „ *dorsalis*, v. *terræ-reginæ* var. nov.
- Phanerotis fletcheri*, Blgr.
- Phractops brevipalmatus*, Gthr.
- Philocryphus australiacus*, Shaw.
- Lechriodus melanopyga*, Doria.
- Hyla macgregori*, Ogilby.
- „ *ewingii* v. *alpina*, var. nov.
- „ „ v. *calliscelis*, Ptrs.
- „ *lesueurii* v. *vinosa*, Lamb.
- Ædura monilis*, de Vis.

Calotes cristatellus, Kuhl.

Gonyocephalus spinipes, A. Dum.

Chelodina intergularis, *sp. nov.*

Pseudelaps christieanus, *sp. nov.*

„ *minutus*, *sp. nov.*

i. NOTES ON, AND DESCRIPTIONS OF NEW OR
LITTLE KNOWN AUSTRALIAN AND
PAPUASIAN FROGS.

1. AUSTROCHAPERINA BREVIPES, *sp. nov.*

Austrochaperina robusta (part), Fry, Rec. Austr. Mus.,
ix, 1912, p. 89, pl. viii, fig. 2-2b.

Habit very stout. Head two-thirds as long as broad, the measurement taken at a line drawn between the hinder margins of the tympana. Snout rounded, very slightly prominent, shorter than the orbital diameter. Nostril much nearer the tip of the snout than the eye. Canthus rostralis moderately rounded; loreal region slightly concave. Interorbital space broader than the upper eye-lid. Tympanum rather distinct, slightly less than half the diameter of the eye. Lower jaw rounded, tri-lobed. Tongue very large, oval, entire, free right along the sides and for about half its length posteriorly. Two dermal œsophageal ridges; anterior very weak although nearly as extensive as the posterior, with a well developed median lobe and pappilose laterally; posterior ridge extending right across the hinder palate and strongly and evenly serrated. Arms weak. Fingers depressed; discs distinct but not enlarged; a thick fringe present; first nearly as long as second, cylindrical and not disced; an indistinct metacarpal pad on the base of the first finger. Hind limb very stout. Toes rather short, depressed; third, fourth and fifth with a distinct rather thick fringe; discs larger than the finger discs. A very small oval inner metatarsal tubercle. The length of the outstretched hind-limb, from the anus to the tibio-tarsal articulation, equals the distance between the anus and the shoulder.

Colour (spirits):—Upper-surfaces uniform fawn brown, spotted and speckled with chocolate brown. A dark streak

from the tip of the snout through the eye to the shoulder. Under-surfaces uniform creamish.

Total length of type 28.5 mm

Localities :—One specimen from the Bloomfield River, near Cooktown. North-eastern Queensland, collected by Mr. Geo. Hislop, in 1897.

The specimen on which this new species is founded was regarded in my original description of *Austrochaperina robusta** as a variety of that species. It was placed in var. B. of *A. robusta*, a variety which may still be distinguished amongst the collection of type specimens by the absence of a thread-like dorsal stripe. *A. brevipes* is distinguished from *A. robusta* by its larger size, the type of the latter being only 23mm. in length, its broader head, its much shorter and stouter hind-limbs, and the more accentuated markings. The colouration of the type of *A. brevipes*, after 17 years immersion in spirits, resembles markedly that of *Chaperina polysticta* as shown by von Méhely's† figure. However, in that species the spots are rather fewer and larger than in my new *Austrochaperina*.

I have examined the sternal apparatus of *A. brevipes* and find that it differs from *A. robusta* in the greater development of the procoracoid cartilage, showing a condition intermediate between the latter and *Chaperina punctata*, v. Kampen,‡ for a specimen of which I am indebted to the author.

2. LIMNODYNASTES TASMANIENSIS, Gthr.

Limnodynastes tasmaniensis, (Gthr.) Boulenger, Brit. Mus. Cat. Batr., 1882, p. 260. *Id.*, Fletcher, Proc. Linn. Soc., N.S.W. (2), iv, 1889, pp. 365 and 374. *Id.*, Fletcher, *loc. cit.*, v, pp. 667-676. *Id.*, Fletcher, *loc. cit.*, vi, 1891, p. 271. *Id.*, Fletcher, *loc. cit.*, vii, pp. 7-18 (*L. fletcheri*, Blgr., a var. of *L. tasmaniensis*). *Id.*, Fletcher, *loc. cit.*, xxii, 1898, p. 662. *Id.*, Lucas and le Souef, Anim. Austr., 1909, p. 269. figs. *Id.*, English, Proc. Zool. Soc., 1910, p. 268, pl. li, figs. 1-2.

* Fry—Rec. Austr. Mus., ix, 1912, p. 89.

† Méhely—Termés. Füzetek, xxiv, 1901, pl. xii.

‡ Van Kampen—Nova Guineæ, ix, 1913, p. 463, pl. xi, fig. 7.

There is a reason to doubt Gerard Krefft's record* of this species from South Australia, for it is probable that the specimens were those afterwards described by Dr. Gunther as *L. platycephalus*. The only other record is that of Peters.† This record is substantiated by a specimen forwarded recently to the trustees by Miss A. M. Sharply from Narracoorte, a township near the Victorian border in South Australia.

In this specimen there is no trace of an outer metatarsal tubercle so distinct in *L. platycephalus*, although it sometimes does occur in Eastern Australian examples. The toes are normally fringed, and the width of the head is normal. Whether *L. platycephalus* is distinct or not, there can be no doubt that the true *L. tasmaniensis* shares with it or lives closely approximated to its habitat.

3. LIMNODYNASTES PLATYCEPHALUS, Gthr.

Limnodynastes platycephalus (Gthr.) Boulenger, Brit. Mus. Cat. Batr., 1882, p. 260, pl. xvii, fig. 3.

Redescription of *Limnodynastes platycephalus*, Gthr.

Habit moderate. Head, three-quarters as long as broad, the measurement taken at a line drawn between the hinder margins of the tympana; very depressed. Snout bluntly rounded, not prominent, less than the diameter of the eye; nostril much nearer the tip of the snout than the eye; canthus rostralis rounded, loreal region with a concavity in the form of a narrow groove. The outline of the tympanum is very slightly visible, about half the diameter of the eye. Interorbital space considerably broader than the upper eye-lid. Vomerine teeth in two long contiguous series, perfectly transverse and not arched, behind, and extending beyond the outer edge of the widely separated choanæ. Tongue sub-circular, entire. Skin smooth with very obscure flat warts; no fold above the tympanum, but a glandular thickening along the side; a yellowish gland from below the eye past the angle of the mouth; under-surfaces smooth

* Krefft:—Cat. Industr. Nat. Prod., N.S.W., Paris Exhib., 1867, App., p. 107.

† Mon. Berl. Ac. 1863.

except for some small whitish granules on the hinder side of the thighs. Limbs moderate. Fingers with a slight fringe, the first shorter than the second; sub-articular tubercles distinct but not prominent; three well developed metacarpal tubercles, one at the base of the first finger. Toes with a slight fringe and the merest indication of a web between their bases; sub-articular tubercles prominent; a small oval inner and a distinct round outer metatarsal tubercle. The distance between the anus and the tibio-tarsal-articulation equals the distance between the latter and the tympanum.

Colour (Spirits):—Dark-grey above, speckled, spotted and marbled with darker. An indication of an interrupted light dorsal stripe. A black streak along the canthus; lips spotted; sub-orbital gland a yellow streak. Shank spotted but not barred. Under-surfaces yellowish to brownish; throat grey. Sides, thighs, and shank with brownish freckles.

Measurements in Millimetres.

Length of head to tympana	..	..	12 mm.
Width of head at tympana	..	..	16 mm.
Length of hind limb, anus to tarso-metat-art.			40 mm.
Total length, anus to tip of snout		..	40 mm.

Loc.:—One specimen from Wilcannia, Darling River, Western New South Wales, collected by R. Helms in 1890.

At present there appear to be only three specimens of this species known. These certainly warrant our recognising it as distinct from its ally, *L. tasmaniensis*. The distinguishing characters are the most extensive vomerine teeth, which extend outwards well beyond the choanæ, the broader head, and to a lesser extent, the disposition and nature of the colour markings. Several other differences noted may be due to individuality, but we require further specimens to prove this. The species has arisen at the western limit of *L. tasmaniensis*, and its presence on the Darling River in Western New South Wales proves that it has followed the watercourses northward in that state. Although it is here found in company with *L. fletcheri*, I regard the latter as having arisen after isolation from the true Eastern *L. tasmaniensis*, either (1) after crossing the Dividing Range or entering Western

New South Wales by way of the upper reaches of the Murray River from Gippsland, or (2), after crossing the low watershed of Southern Queensland.

4. LIMNODYNASTES FLETCHERI, Blgr.

Limnodynastes fletcheri, Boulenger, A.M.N.H., (6), ii, 1888, p. 142. *Id.*, Fletcher, Proc. Linn. Soc., N.S.W., (2), v, 1890, pp. 672 and 675.

Limnodynastes tasmaniensis (Gthr.) var. (?) Fletcher, *loc. cit.*, vii, 1892, pp. 16-18. *Id.*, Fletcher, *loc. cit.*, viii, 1894, p. 529.

Limnodynastes marmoratus, Lamb, Ann. Q'land. Mus., No. 10, 1911, p. 28. *Id.*, Fry, Rec. Austr. Mus., ix, 1912, pp. 98 and 106. (= *L. fletcheri*.)

There are seven examples of this species in the Museum collection taken by Mr. Robt. Helms, at Wilcannia, Darling River, Western New South Wales. Besides these, are two unlocalized examples and a co-type specimen of Lamb's *L. marmoratus*. The latter agrees well with the Western New South Wales examples.

Limnodynastes fletcheri is a larger and stouter species than *L. tasmaniensis* and may be distinguished by the following characters:—The toes are very much more pointed and fringed and have a prominent basal web. (This was suggested by Mr. Fletcher, who forwarded the types to Dr. Boulenger, to be possibly due to immersion in too strong a preserving fluid, but my specimens dispel all doubt and show that the condition is natural). The skin is rough and glandular. The markings on the back consist of coarse marmorations of dark brown (sometimes grey) with noticeable suffusions of bright carmine or pink, most pronounced on the eyelids. There is always only one metatarsal tubercle, an outer.

5. LIMNODYNASTES OLIVACEUS, de Vis.

Limnodynastes olivaceus, de Vis, Proc. Linn. Soc., N.S.W., ix, 1884, p. 66. *Id.*, Boulenger, A.M.N.H., (5), xvi, 1885, p. 387.

Re-description of *Limnodynastes olivaceus*, de Vis.

Habit moderate. Head three-quarters to four-fifths as long as broad, the measurement taken at a line drawn between the hinder margins of the tympana. Snout rather prominent and pointed when seen from above, longer than the orbital diameter; nostril equidistant between the eye and the tip of the snout; canthus rostralis very rounded; loreal region grooved. Tympanum hardly discernible or completely hidden. Interorbital space as broad as the upper eye-lid. Tongue large, oval or sub-circular, entire, free behind and a little on the sides. Vomerine teeth in two long straight or slightly arched series behind, and extending well beyond the outer edge of the choanæ. Limbs moderate. Fingers free, cylindrical, not fringed, first as long as second; sub-articular tubercles very prominent; two outer metacarpal tubercles and a third large one at the base of the first finger. Toes cylindrical, tapering, quite free; sub-articular tubercles very prominent, conical; a conical outer, but no inner metatarsal tubercle. Skin warty; sometimes with short plicæ; sometimes the warts are large oval and raised, or round and flat, but always profusely present (they are often exactly covered by a dark spot). A weak gland from below the eye to above the forearm. Sides with a distinct fold; no fold across the chest or along the inner edge of the tarsus. Under-surfaces uniformly smooth. The distance between the anus and the tibio-tarsal articulation is equal to the distance between the latter and the tympanum.

Colour (spirits):—Uniform greyish above (perhaps olive in life) with numerous roundish black spots, which sometimes form more or less broken bands of which a broad dorsal one—commencing between the eye-lids, and a lateral one can usually be traced. Upper-surface of snout usually with a light triangular mark. No dorsal stripe. Lips barred or spotted. Limbs spotted. Under surfaces uniform white or with a few spots of grey on the chin.

Measurements in Millimetres.

Total length, from tip of snout to anus	45 mm.
Length of head, to tympana	14 mm.
Width of head, at tympana	18 mm.
Length of hind-limb to tarso-metat-articul.	40 mm.

Locs.:—Four specimens from Mapoon, Gulf of Carpentaria, North Queensland, collected by Mr. Charles

Hedley. There are also two unlocalised specimens and one from Herbert River, North-east Queensland.

L. olivaceus differs from *L. tasmaniensis* which it replaces on the north and central coast of Queensland, by the following characters:—The toes are cylindrical, generally devoid of a basal web or any trace of fringe; the sub-articular tubercles are very prominent and conical; only one metatarsal tubercle always; the back has prominent warts; the snout is more pointed; and more or less by the broken up nature of the markings of the back, and their tendency to distribution in characteristic bands.

The four species of *Limnodynastes* so far noticed, e.g., *L. tasmaniensis*, *platycephalus*, *fletcheri*, and *olivaceus*, form a natural group more or less distinct from the rest of the genus. They are closely allied to each other, and it becomes a question whether we should regard them as distinct species or as geographical varieties of one, *L. tasmaniensis*. Of all but *L. platycephalus* I have examined a series of specimens, but of that species I have only seen one. This, however, certainly supports its separation from *L. tasmaniensis*. The distinguishing characters of the four species are of relative value, and although to an extent variable, do not merge completely with one another. The habitat of each, with the exception of *L. platycephalus*, is distinct. While at present their validity as species is perhaps a matter of opinion, I am inclined to believe that they are correctly regarded as such.

6. LIMNODYNASTES DORSALIS, var. TERRÆ-REGINÆ, var. nov.

(Text fig. 2a, sacral verteb.)

L. dorsalis, v. *dumerilii*, Ptrs. (part), Fry, Rec. Austr. Mus., x, 1913, pp. 26-28. 30, pl. iii, fig. 2.

A variety proposed for north and central coastal Queensland examples, differing from *L. dorsalis* v. *dumerilii* confined to South Australia, Victoria, Tasmania, New South Wales and Southern Queensland, in the following characters:—The habit is excessively stout and the size very large; the hind-limb is very short being 1.1 to 1.25

in the total length; the head is usually broader, but occasional New South Wales specimens are found with just as broad heads; vomerine teeth very strong, always extending well beyond the outer edge of the choanæ; toes short and cylindrical, *usually devoid of fringe*; in far northern examples the spots are disposed in well marked bands and a light dorsal stripe may be present; under-surfaces often with light red suffusions.

SPECIMEN NO.	1	2
	mm.	mm.
From snout to vent	79.5	78
Head, to level of tympana	24	22
Width of head at tympana	37.5	36
Hind-limb, anus to tip of toe	87	100

Specimen No. 1 from Cape York (one of the types).

Specimen No. 2 from Burnett River. Shows how the length of the hind-limb lengthens as we go south. The other characters, too, show a gradual passing into the southern variety.

Type:—In the Australian Museum, Sydney. Reg. No. R.4525.

Loc.:—Somerset, Cape York, N. Queensland, collected by Messrs. Hedley and McCulloch in 1907.

Since writing the paper referred to above on the varieties of *L. dorsalis*, Gray, it has become evident that the characters noted on p. 30 of some Cape York examples are to a great extent constant throughout specimens as far south as the Burnett River in Queensland. The inclusion of these specimens in var. *dumerilii* makes that variety so comprehensive that I think it best to separate off this distinct form as a separate variety. The var. *terræ-reginæ* then, will stand for all specimens from the area north of the Burnett River, including the district drained by the river itself. At some locality south of the Burnett River and probably north of the Brisbane River, this new variety blends with var. *dumerilii*, for specimens from Brisbane possess the characters of the latter.

7. PHANEROTIS FLETCHERI, Blgr.

(Pl. I, fig. 2, mouth only. Text fig. 1.)

Phanerotis fletcheri, Boulenger, Proc. Linn. Soc. N.S.W., (2), v, 1890, p. 593. *Id.*, Fletcher, Proc. Linn. Soc., N.S.W., (2), v, 1890, p. 669. *Id.*, Fry, Mem. Q'land Mus., ii, 1913, p. 47.

The types of this rare frog were taken at Dunoon, Richmond River, north coast of New South Wales, by Richard Helms, in 1890. In the Australian Museum collection is a single adult specimen collected by the late J. A. Thorpe, in the year 1886, at Ourimbah, near Gosford, N.S. Wales. Ourimbah is about forty miles north of Sydney and is the southern termination of a stretch of "Dorrigo Scrub" country possessing the same geological and botanical features as that in which the types were procured. Its range is thus extended about two-hundred miles southwards.



Fig. 1.—*Phanerotis fletcheri*. Blgr. Superior and lateral view of head of a specimen from Ourimbah, N.S. Wales. Slightly enlarged.

This specimen differs slightly from the types as follows:—In transverse diameter the tympanum is two-thirds the eye, perpendicularly it is four-fifths; the \wedge -shaped fold between the shoulders is absent. The colouration is here described in detail:—Upper-surface of body and limbs greyish green to putty colour, with obscure faint blotches of darker grey on the back; a fairly distinct dark cross-bar between the eye-lids; sides of head with faint marks, one of which runs from the eye to the lip; a thin, broken rostral streak of chocolate-brown which continues from behind the eye to the posterior edge of the tympanum, where it breaks into a few disconnected spots on the shoulder: front, hinder and under-surfaces of limbs reddish-brown

with small grey spots; lower-surfaces of body yellowish, the gular region with faint brown spots; with the exception of the sides of the body the colour of the upper and lower surfaces shows a sharp line of demarcation; the limbs bear indistinct cross-bars.

8. PHRACTOPS BREVIPALMATUS, Gthr.

Chiroleptes brevipalmatus, (Gthr.), Boulenger, Brit. Mus. Cat. Batr., 1882, p. 269, pl. xvii, fig. 5. *Ia.*, Spencer, Rep. "Horn." Sci. Expd., 1896, p. 165. *Id.*, Fletcher, Proc. Linn. Soc., N.S.W., xxii, 1898, pp. 678 and 682. *Id.*, Lucas and le Souef, Anim. Austr., 1909, p. 277.

This species is known from the following localities:—Port Denison, Cape York, Gayndah and Peak Downs, in Queensland (Boulenger, 1882), Central Australia (Spencer, 1896), King's Sound, Fitzroy River, and Margaret Creek in Western Australia (Fletcher, 1898). It does not, however, appear to have been recorded from New South Wales, but in the Museum collection are eighty well preserved specimens from Wilcannia on the Darling River, in the far west of that State.

9. PHILOCRYPHUS AUSTRALIACUS, Shaw.

Rana australiaca, Shaw, Nat. Misc., vi, 1795, pl. 200, and text. *Id.*, Andersson, Kungl. Sv. Ak. Handl., Bd. 52, 1913, p. 3.

Rana spinipes, Schneider, Hist. Amphi. i, 1799, pp. 129 and 139. *Id.*, Shaw, Gen. Zool., iii, i, 1802, p. 112. *Id.*, Andersson, *loc. cit.*

Heleioporus albopunctatus, Gray? Fletcher, Proc. Linn. Soc., N.S.W., (2), v, 1890, p. 671.

Philocryphus flavoguttatus, Fletcher, *loc. cit.* (2), viii, 1894, p. 233. *Id.*, Lucas and le Souef, Anim. Austr., 1909, p. 282, fig. *Id.*, Steel, Austr. Nat., ii, 1912, p. 135, (habits). *Id.*, Fry, Rec. W. Austr. Mus., i, 1914, p. 205, figs. 8a and 9.

Whilst recently referring to Shaw's "Naturalists' Miscellany" (1795) I was struck with the resemblance between the frog figured on plate two-hundred as *Rana*

australiaca and that described a century later by Mr. J. J. Fletcher as *Philocryphus flavoguttatus*. In comparison to recent figures Shaw's figure is of course very crude, but it permits of identification just as well as the figures of *Rana cærulea*, *Coluber porphyriacus*, etc., which form the basis of present recognised species. As will be shown later the two frogs are almost certainly identical, so that no course is open but to replace Fletcher's well founded name. This is to be regretted, for *Rana australiaca* was founded on a drawing sent to Dr. Shaw from New Holland and no specimen type exists, while the types of *Philocryphus* are beautifully preserved specimens in Mr. Fletcher's private collection.

As Shaw's work (Nat. Misc.) is rare and not easily accessible the concise description and remarks are here given in toto :—

RANA AUSTRALIACA.

Character Genericus.

Corpus tetrapodum, ecaudatum, nudum.

Linn. *Syst. Nat.*, p. 354.

Character Specificus.

RANA FUSCA, subtus cærulescens, lateribus gilvo punctatis, digitis anterioribus spinosis.

On the following page, not numbered, facing plate 200, Dr. Shaw remarks :—

“This animal certainly cannot be numbered amongst the most beautiful of its genus : it is a species, however, which has never before been described, and is more particularly interesting from the circumstances of its being a native of the distant regions of New Holland, which has added so many zoological treasures to the cabinets of natural history. Its rarity must, therefore, apologise for its deformity.”

In General Zoology (1802), Shaw gives a useful reference and some supplementary remarks as follows:—

“*Rana Australiaca*. Australian Frog. *Naturalists’ Miscellany*, vol. 6, pl. 200.

Rana spinipes. *Schneid. Amph.*, p. 129-139.

“This was first described in the *Naturalists’ Miscellany*; and so careful has Mr. Schneider been to preserve it from oblivion, that he has twice described it in his own work within the compass of a few pages. He is mistaken, however, in supposing it to exist in the British Museum; the figure having been etched from a drawing made in New Holland, its native country. Its size appears to be somewhat larger than that of the common European Frog, and its habit approaches rather to that of a toad, or a Natter-Jack, which latter it seems to resemble in its manner of walking, viz., with the limbs elevated, or in the manner of the generality of quadrupeds. All the feet are unwebbed.”

There are only two Australian frogs which could reasonably be compared with *Rana australiaca*, Shaw, namely, *Philocryphus flavoguttatus*, Fletcher, and *Limnodynastes dorsalis*, Gray (eastern form, var. *dumerilii*, Ptrs.). The “spines” on the hands, which, no doubt, prompted Schneider to rename the species “spinipes,” are secondary sexual characters developed only in males, and are of course seasonal. It is this character which prevents us further considering it with *Limnodynastes dorsalis*. In that frog, as in *Hyla aurea*, Lesson, the nuptial excrecence is in the form of a flat, horny, brown plate on the inner side of the first finger, spines being quite absent. The distribution of these spines in Shaw’s figure is not exactly as shown by my specimens of *Philocryphus*, but gives a general representation. The tympanum is figured as hidden. As in the case of the spines this must not be seriously considered. Even though the tympanum of *Philocryphus* is described as ‘distinct,’ it is nevertheless not obvious and may easily have escaped notice by a colonial artist, or if indicated by him, not reproduced in Shaw’s etching. Such a character did not then have the

significance it has to-day, and the obscure tympanic rim and undifferentiated colouration makes it easy to understand its absence in the figure, which undoubtedly gives a striking, if a little impressionistic, representation of this ungainly frog. The colouration resembles closely one of my specimens. In *L. dorsalis* there is a yellowish glandular band laterally, but the row of spots figured are typically those of *Philocryphus*, giving the suggestion for Fletcher's specific name *flavoguttatus*. Hence I regard *P. flavoguttatus*, described in 1894, as identical with *Rana australiaca*, described a century earlier. As has been shown* recently *Philocryphus* is not, as afterwards supposed by Fletcher, synonymous with *Heleioporus*, therefore the name will be altered to *Philocryphus australiacus*.

The disappearance of a well figured, named, and localised frog from literature is unaccountable. L. G. Andersson recently called (see syn.) attention to the fact that the name *Rana australiaca* had disappeared from literature subsequent to the mention by Schneider in 1799 and Shaw in 1802. After examining the works of Daudin, Cuvier and Merrem, he says that "but a single Australian species is recorded, viz., White's *Rana (Hyla) cœrulea*." He also suggests the likelihood of Shaw's locality being erroneous, suggesting that perhaps the frog really came from the East Indies and not New Holland, in which case it would probably prove identical with *Bufo melanostictus*. We have no need to assume this, however.

10. LECHRIODUS MELANOPYGA, Doria.

(Plate I, fig. 1, Text fig. 2c.)

Asterophrys melanopyga, Doria, Ann. Mus. Civ. Genov., vi, 1874, p. 355, pl. xii, fig. k. *Id.*, Ptrs. and Doria, loc. cit., xiii, 1878, p. 417.

Batrachopsis melanopyga, Boulenger, Brit. Mus. Cat. Batr. Sal., 1882, p. 439. *Id.*, Lucas, Proc. Linn. Soc., N.S.W., xxiii, 1898, p. 359.

* Fry:—Rec. W.A. Mus., I, 1914, p. 206, fig. 8a and 9.

Lechriodus melanopyga, Boulenger, Brit. Mus. Cat. Batr. Grad., 1882, p. 116 (footnote). *Id.*, Fry, Mem. Q'land. Mus., ii, 1913, p. 48.

There are three specimens of this frog in the Museum collection. Two were presented to the trustees by Mr. Thos. Steel, F.L.S., and are those mentioned by Lucas (see synonymy), from Fife Bay, British New Guinea. The third example was collected by the Royal Geographical Societies' Expedition of 1885, in the St. Joseph's River District, British Papua. Barbour's* tables of distribution published in 1912, record this frog from Dutch Papua only.

Lucas notes that the "tympanum is nearly as long in vertical diameter as the eye is wide. There is no perceptible dark streak on the canthus rostralis." In my third example these differences may also be noted. All three specimens differ strikingly from Doria's figure and Boulenger's description by the broader head, the more slender habit, and longer limbs. Shrinkage due to preservation might account for the more slender habit, but the broad head and longer limbs make it difficult to believe that my specimens really belong to this species. The figure of the St. Joseph's River example will assist those more fortunately situated to determine this point.

The striking resemblance between certain Cystignathids, notably *Limnodynastes*, *Phanerotis*, and *Ranaster*,† and the Pelobatid genus *Lechriodus*, has previously‡ been referred to. So complete is the resemblance of *Phanerotis* to *Lechriodus* that it is difficult to find even specific characters with which to distinguish them. *Limnodynastes*, however, is easily separated from *Lechriodus* by its hidden tympanum, while *Ranaster* is at present only doubtfully distinct from *Phanerotis*. A striking feature in common is mentioned by Boulenger|| "in the female (of *Lechriodus*) the two inner fingers are lobate, as in many *Limnody-*

* Barbour—Mem. Mus. Comp. Zool. Harv., xlv, No. 1, 1902, p. 177.

† Van Kampen has shown (Nov. Guin., v, i, 1909, p. 136), that this frog, which he mentions under the name of *Phanerotis novæ-guineæ*, belongs to the Cystignathidæ.

‡ Fry—Mem. Q'land Mus., ii, 1913, p. 48.

|| Boulenger—Brit. Mus. Cat., 1882, p. 440.

nastes," a character which does not occur, so far as I am aware, in any other Pelobatid. As the chief difference between the Cystignathids mentioned and the Pelobatid *Lechriodus* appears to lie in the extent of dilation of the sacral vertebræ, I have figured those of two Australian genera showing close affinity, to show the fallacy of such a character for distinguishing purposes. A glance at the figure shows that a clear line of demarcation between the two families with regard to this character does not exist.

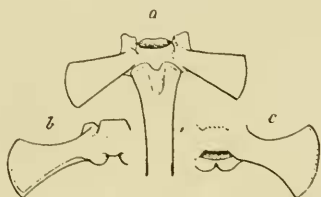


Fig. 2.—a. Sacrum of *Limnodynastes dorsalis*, Gray.
 b. Sacrum of *Heleioporus allopunctatus*, Gray.
 c. Sacrum of *Lechriodus melanopyga*, Doria.

The anterior edge of the neural arch and the zygopophyses of *c* were badly broken during dissection.

In the Neotropical genera of Cystignathidæ, true cylindrical diapophyses are an almost invariable rule, but the Australian members of this family exhibit all stages between that of *Heleioporus* with considerably dilated diapophyses and the condition shown in South American genera. In *Crinia*, an Australian genus of Cystignathidæ, the sacral diapophysis is quite cylindrical; in some *Limnodynastes* they are slightly dilated, most conspicuously so in *L. dorsalis*, here figured; in *Chiroleptes* and *Heleioporus* they are so expanded as to be nearer the condition of the Pelobatid *Lechriodus* than to the typical Cystignathidæ. I think that these Australian genera should be considered as true Cystignathids, but Boulenger's definition of the sacral diapophysis—cylindrical or slightly dilated—hardly implies their true condition if we are to regard *Lechriodus* as possessing *strongly* dilated vertebræ.

The home of the Cystignathidæ is undoubtedly South America. It appears just as certain that our Australian members of this family have arisen directly from South American stock, though showing divergent lines of specialis-

ation in several genera. *Lechriodus* is a Pelobatid of doubtful affinities (as regards other members of its family) and with *Asterophrys* exists well separated from other genera of the Pelobatidæ. Thus its affinity to the Australian Cystignathids and its propinquity of habitat point to a striking conclusion. A true Cystignathid, too, *Phanerotis* (= *Ranaster*), is now known from New Guinea.

11. HYLÄ MACGREGORI, Ogilby.

(Plate II, Text figure 3.)

Hyla macgregpri, Ogilby, Rec. Austr. Mus., i, 1890, p. 100.

Hyla thesaurensis (Ptrs.) v. Méhely, Term. Füzetek., xx., 1897, p. 414, pl. x, fig. 7.

Size small. Habit very slender. Head almost as long as broad, the measurement taken at a line drawn between the hinder margins of the tympana. Eye large, its diameter a trifle longer than that of the snout; the latter rounded, slightly prominent; nostrils much nearer the tip of the snout than the eye; canthus rostralis very rounded; loreal region not concave. Inter-orbital region a little broader than the upper eye-lid. Tympanum very distinct, perfectly round; separated from the eye by a distance less than its diameter, which is about one-half that of the eye. Tongue oval or sub-circular, entire, sometimes with a median longitudinal groove or three small dimples; free a little behind and on the sides. Vomerine teeth always present; in two small oblique separated groups, their front edges on a level with the hinder edges of the widely distant choanæ. Skin smooth; a mere indication of a fold above the tympanum across the chest and along the inner edge of the tarsus; under-surfaces of the thighs and belly granular. Fingers with a distinct web, the deepest part of the concavity of the web between the third and fourth on a level with the proximal sub-articular tubercle; others less than one-third webbed; fringed to the discs; discs as large as the tympanum; sub-articular tubercles distinct; a number of swollen

tubercle-like pads on the palm; a metacarpal tubercle opposite the base of the first finger. Toes almost webbed to the discs except on the fourth; discs a little smaller than finger discs; sub-articular tubercles distinct; a small inner metatarsal tubercle. The distance between the anus and the tibio-tarsal articulation of the outstretched hind-limb, equals the distance between the latter and the anterior border or a little in front of the eye.

Colour (spirits):—Mr. Ogilby's colour description is so excellent that it is best to quote it *verbatim*:—

“Variable, those of the two extreme forms being as follows: (a) upper-surface of head and body dark brown, the former with small yellow spots, the latter with three broad yellow longitudinal bands; the median band commences generally between the eyes, but is sometimes produced forwards to the tip of the snout, and terminates on the rump; the lateral bands are broader, commence at the postero-superior angle of the orbit, and terminate abruptly at a point beyond the middle of the sides; a row of yellow spots between the bands present or absent;

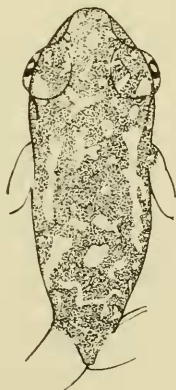


Fig. 3.—*Hyla macgregori*, Ogilby.
One of the types, a half-grown specimen. Enlarged about twice.

sometimes a well marked cross-band on the rump; sides dark brown with yellow spots; upper surface of limbs lighter brown with yellow spots, sometimes of moderate

size and scattered, but more commonly in small freckles ; lower parts creamy white. The yellow marks are frequently replaced by white ; (b) general colour much lighter brown, the yellow or white spots or bands being replaced by pale brown or dirty white ; otherwise as in var. *a*. In some young examples the upper parts are so profusely blotched with white as to almost entirely hide the dark ground colour, but, as a rule, the pattern of colouration, as given in the description of var. *a*, is not materially departed from."

"This Tree Frog appears to be common in the St. Joseph's River district, since no less than twenty-six specimens were sent down by Sir Wm. Macgregor, to whom I have much pleasure in dedicating this handsome species. The largest example measures 30mm. from snout to vent." (Ogilby.)

The affinities of this frog are with *H. thesaurensis*, Ptrs., differing in the amount of webbing, the length of the hind-limb and the position of the vomerine teeth. The colouration, too, although of the same type, differs in details.

The distribution credited to *H. thesaurensis* at present is German New Guinea and the Solomon Islands. The Papuan record is based on a specimen determined by Dr. von Méhely as *thesaurensis*, but which I have not any hesitation in pronouncing to be a specimen of *H. macgregori*. The Austrian author's figure shows this beyond question, while the differences he notes between his specimen and Boulenger's* Solomon Island examples are precisely the characters in which *H. macgregori* differs from *H. thesaurensis*. Therefore, the distribution of each must be amended. *H. macgregori* is confined to British and German Papua, and *H. thesaurensis* to the Solomon Islands.

The specimen figured on Plate II, fig. 3, is not quite the largest specimen, but is, perhaps, the most typical : that figured in the text is only a half-grown example. I cannot account for the discrepancies between Mr. Ogilby's description and my own.

* Boulenger :—Tr. Linn. Soc. Lond., xii, 1890, p. 60, pl. xi, fig. 4.

12. *HYLA EWINGII*, D. and B. *var. ALPINA*, *var. nov.*

(Plate III, fig. 2, Text fig. 4.)

Hyla ewingii v. *orientalis*, Fletcher, Proc. Linn. Soc., N.S.W., xxii, 1898, p. 670 (part).

Habit moderate. Head two-thirds as long as broad, the measurement taken at a line drawn between the hinder margins of the tympana. Snout rounded, a little longer than the orbital diameter; nostril elevated, slightly nearer the tip of the snout than the eye; canthus rostralis distinct; loreal region very oblique, concave. Tympanum upright-oval, perfectly distinct, separated from the eye by a distance equal to its own diameter, which is half to two-thirds that of the orbit. Interorbital space almost as broad as the upper eye-lid. Tongue broadly shield-shaped or oval, slightly nicked behind. Vomerine teeth in two fairly large, oblique, sometimes contiguous groups, between the choanæ. Limbs normal. Fingers tapering, with a very fine fringe which is very slightly enlarged at the bases between them so that it might be said that a rudiment of a web is present; if anything, this is best developed between the first and second and second and third fingers; first finger slightly shorter than the second; discs swollen, but not enlarged, a little more than half the transverse diameter of the tympanum; sub-articular pads tubercular; several rows of tubercles on the metacarpals; a large tubercle on the inner side of the base of the first finger which may bear a brown rugosity in breeding males. Toes moderate, not webbed to the discs; the third and fifth about three-quarters, the fourth about two-thirds webbed, the fringe continuing to the discs; the latter small, if anything smaller than the finger discs; a well developed inner metatarsal tubercle, in adult specimens of quite an unusual size for a *Hyla*; sub-articular tubercles distinct and a row of smaller tubercles on the under side of the phalanges and metatarsals. Tibio-tarsal articulation of the out-stretched limb reaching to the eye. Skin of back and limbs warty above, the vertebral region grooved and usually devoid of warts. The warts usually commence, with a distinct line of

demarcation, between the eye-lids and sometimes border the tympanum posteriorly. A distinct glandular fold above the tympanum and also on the inner side of the tarsus; sides sometimes plicate. A distinct fold across the chest. Gular region, chest, belly, underside of thighs and arms coarsely granular.

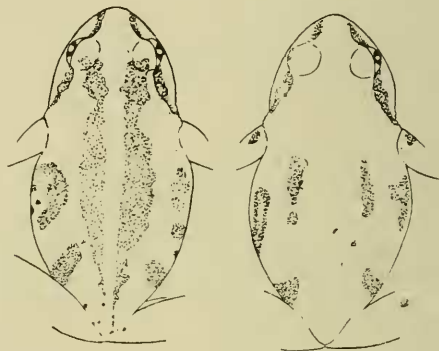


Fig. 4.—*Hyla ewingii*, var. *alpina*, Fry. Two co-type specimens showing variation in colour marking. Slightly enlarged.

Colour (spirits):—Light olive green or purplish brown above, almost uniform or with dark bands which may be broken into isolated spots. Usually two broad brown bands commence between the eyes and continue to the sacral region, separated along the vertebral line. Sides with a chain of large blackish light-edged spots, the largest in the inguinal region running obliquely from the back to the groin. A narrow brown light-edged streak commences on the tip of the snout and borders the canthus to the eye; from the posterior border of the eye, whence it becomes much broader, it passes through the tympanum to the shoulder. Upper-surfaces of arms and legs variously blotched and spotted with brown. Some specimens are almost uniform greenish above, the bands being so broken as only to be represented by a few isolated spots, in which case a very large black inguinal spot is always present. Under-surfaces uniform creamy yellow.

The life colours of this frog are truly beautiful. The whole of the upper-surfaces may be either suffused with

olive green or uniformly of the purest of pea-greens. The brown bands and spots do not change to any great extent when put into alcohol, but the green almost entirely disappears. The under-surfaces are lemon yellow. The resemblance of this frog to *Hyla regilla*, Bd. and Gir., of North America, as regards its life colours, is worthy of note. *H. regilla* has been beautifully figured by Miss Mary C. Dickerson,* two plates showing clearly the enormous range of colour and marking displayed by different individuals, many phases of which forcibly suggest those of *H. ewingii* v. *alpina*.

Length of head, to hinder edge of tympana	12 mm.
Width of head at tympana	17 mm.
Total length, snout to anus	48 mm.
Length of hind-limb to tib.-tars. art. ..	41 mm.

Locs. :—Twenty-two specimens from Mount Kosciusko, Monaro District, Southern tableland, New South Wales. Three specimens collected by Mr. A. R. McCulloch were taken at an altitude of 5,200 feet. Mr. Charles Hedley and Mr. Robert Helms have taken them at 5,500 feet, while four collected by Dr. T. H. Johnston are said to be from 7,000 feet altitude. I have to thank Messrs. Hedley, Johnston, and McCulloch for their kindness in bringing me specimens alive.

This new variety can be distinguished from the other varieties of *Hyla ewingii*, D. and B., by its warty back, scarcity of webbing, small discs and tapering fingers, and by the predominance of green in its life colouration. As regards the amount of webbing and size of the finger discs, however, var. *alpina* overlaps some examples which are true specimens of var. *orientalis*.

Type :—In the Australian Museum, Reg. No. R. 4644.

Mr. J. J. Fletcher† has gone very fully into the relative values and distribution of the proposed varieties of *H. ewingii*. As the result of a careful examination of over one hundred specimens, he arranges the varieties as follows :

* Dickerson :—The Frog Book, New York, 1907, col. pls., viii—ix.

† Fletcher :—Proc. Linn. Soc., N.S.W., xxii, 1898, pp. 665-73.

H. ewingii v. *typica* (Tasmania and Victoria).

H. ewingii v. *calliscelis*, Ptrs. (Tas., Viet., South and West Australia).

H. ewingii v. *krefftii*, Gthr. (New South Wales).

H. ewingii v. *orientalis* Flet. (Coast of N.S.W.).

The records of "South" and "West Australia" are based on Peters'* original type locality, and Boulenger's† record respectively, no specimens from these States being available to him.

H. ewingii v. *orientalis*‡ was described as a new variety, to receive the New South Wales specimens which would not fit in with *v. krefftii*, Gthr., and overlap the latter in range. Boulenger|| records *v. krefftii* from Port Denison, Queensland, but I am inclined to mistrust that locality, even with a specimen in the Australian Museum with a label, of doubtful validity, showing the locality "Queensland."

In the Australian Museum collection *H. ewingii* is richly represented by over one hundred specimens from many localities. After examining these I find my conclusions are slightly at variance with those of Mr. Fletcher. My understanding of the varieties is as follows:—

Hyla ewingii v. *typica* (Tas., Vic., Iss. Bass Str.)

H. ewingii v. *calliscelis*, Ptrs. (S. and W. Austr.)

H. ewingii v. *krefftii*, Gthr. (N.S.W.)

H. ewingii v. *alpina*, Fry (Tablelands, Southern N.S.W.)

H. ewingii v. *orientalis*, Flet. (Tas.?, Vic., N.S.W.)

Two specimens of *H. ewingii* v. *calliscelis*, Ptrs., from South Australia** show conclusively that it was a mistake to consider specimens with a spotted groin from Eastern Australia as belonging to that variety. Thus I regard *v. calliscelis* as confined to South and Western Australia.

* Peters:—Mon. Berl. Ac., 1874, p. 620.

† Boulenger:—Brit. Mus. Cat. Batr. Sal., 1882, p. 407.

‡ Fletcher:—Proc. Linn. Soc., N.S.W., xxii, 1898, p. 670.

|| Boulenger:—Brit. Mus. Cat. Batr., Sal., 1882, p. 407.

** These two specimens are from Adelaide, Peters' type locality.

Mr. Fletcher's Tasmanian and Victorian specimens of *v. calliscelis* I have placed in his *v. orientalis*, which he had considered as confined to eastern New South Wales. Whether this latter course is correct or not I cannot be quite certain, for *v. orientalis* has not been definitely characterised by its author. At the same time I am unable to find sufficient differences between these Tasmanian and Victorian and the New South Wales examples with spotted groins, to warrant their being regarded as a distinct variety, with a new name. As the inguinal marks in Eastern specimens, unlike the South and West Australian examples, are not associated with any structural characteristics, this seems the most advisable course.

H. ewingii v. calliscelis may be distinguished from all other varieties, save *v. krefftii*, by the large finger discs, which are as large as or larger than the tympanum, by the more extensive webbing of fingers and toes, and by the large very accentuated purple blotches always present on the groin and hinder side of the thighs. From *v. krefftii* it is at once distinguished by the latter character alone. It reaches a larger size than all but *v. alpina*, and is slender in habit like *v. krefftii*. The inguinal and thigh marks of *v. calliscelis* are very different in nature to those which occur in occasional instances in Eastern Australian specimens of *v. orientalis*, and do not vary among themselves to such an extent. They stand out in bold relief on a pale ground and resemble deep, even-edged, purple ink-blotches. It is a most natural thing that, following Dr. Boulenger's meagre description of *v. calliscelis*, the Eastern Australian specimens with spotted groins should have been referred to that variety, but with two well-preserved specimens from Peters' type locality, Adelaide, I do not hesitate to put forward the correction as set out above.

No key to the varieties of *H. ewingii* could be quite satisfactory, for the various forms, though their extremes are very different, nevertheless overlap to a certain extent. The following will serve in the majority of cases :—

Key to varieties of *Hyla ewingii*, D. and B.

- A. Discs of fingers as large as, or a little larger than, the tympanum.
- Fingers not merely fringed at the base but distinctly webbed.

- b. Groin and hinder thigh with accentuated purple blotches. S. and W. Austr. *H. ewingii* v. *calliseclis*, Ptrs.
- c. Groin and thighs yellowish with faint brown speckles. (N.S.W.)
H. ewingii v. *krefftii*, Gthr.
- A.A. Disc of fingers smaller than tympanum. Fingers with a web which is merely a continuation of a more or less obvious fringe.
- d. Back warty. Gular region and undersurfaces of arms coarsely granular. Green or olive above. Kosciusko Plateau.
H. ewingii v. *alpina*, Fry.
- dd. Back smooth or minutely granular.
- e. Back usually greyish. A distinct *silvery* streak from the corner of the mouth. Sides of body and thighs yellow or with delicate speckles. (Tas. and Vic.)
H. ewingii v. *typica* (Blgr. and Flet.)
- f. Back usually brownish. Streak at corner of mouth usually yellowish and not very distinct. Sides of body and thighs with brownish spots. (Tas., Vic., N.S.W.) . . . *H. ewingii* v. *orientalis*, Flet.

13. *Hyla lesueurii*, D. and B., var. *vinosa*, Lamb.

(Plate II, Fig. 2, Text fig. 5.)

Hyla vinosa, Lamb, Ann. Q'land Mus., No. 10, 1911, p. 27.

Hyla lesueurii, D. and B., var., Fry, Rec. Austr. Mus., ix, 1912, p. 106.

Head slightly broader than long, the measurement taken at a line drawn between the hinder margins of the tympana. Snout prominent, longer than the diameter of the eye. Canthus rostralis angular, loreal region oblique, not concave. Nostril nearer the tip of the snout than the eye. Interorbital space as broad as the upper eye-lid. Tympanum very distinct, slightly more than half the diameter of the eye. Tongue sub-circular, slightly nicked and free on the sides and behind. Vomerine teeth in two slightly oblique contiguous groups between the middle of the choanæ. Fingers free, first and second equal; discs enlarged, that of the third finger slightly more than half the tympanum. A large tubercle on the base of the first finger; no external rudiment of pollex; two small approximated metacarpal tubercles, and several small indistinct palmar tubercles. Toes webbed to the discs except on the fourth; discs about as large as those of

the fingers ; a small inner and a larger outer metatarsal tubercle. Skin smooth above, granulate on the belly and symphysis. A fold of skin runs from the eye to the shoulder,

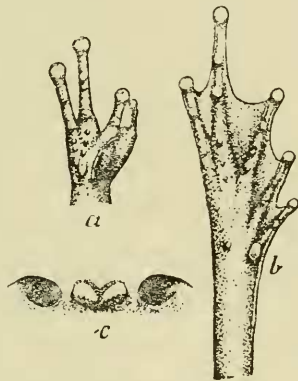


Fig. 5.—*Hyla lesueurii*, D. and B., var. *vinosa*, Lamb.
a hand, b foot. c vomerine teeth (enlarged).

above the tympanum ; another along the inner edge of the tarsus. Tibio-tarsal articulation reaches far beyond the tip of the snout.

Colour (formalin) :—Vinous brown above, with faint irregular smudge. Sides lighter. Under-surfaces creamish. An indistinct dark band between the eye-lids. A brownish band commences behind the eye, and passes through the tympanum to the shoulder, where it breaks up. Groin with about half-a-dozen large dark brown spots, the largest, light-edged. Front side of thighs with an irregular brownish band of markings ; hinder-side black with white marblings. Shank with a few brown spots on the inner side.

The above description and the figure on Plate II. were drawn up from the type specimen of *Hyla vinosa*, Lamb., kindly lent to me by Dr. R. Hamlyn-Harris, Director of the Queensland Museum. In the original description this frog was compared to *Hyla nigrofrenata*, Gthr., but its affinities are more with *H. lesueurii* than that species. I am inclined to regard the differences as too slight to allow it specific distinction from the latter. Nevertheless, it is a good geographical race, although it does not wholly replace *H. lesueurii* in the northern State. I have recently

received from Dr. T. L. Bancroft several specimens of *H. lesueurii* which resemble the typical form, *i.e.*, that found round Sydney, New South Wales. These were collected at Eidsvold, Burnett River, Queensland. Northern Queensland examples of var. *vinosa* are larger than any specimens of the typical form that I have seen, and they also possess relatively much larger discs. If with additional material these characters are proved quite stable, it may then be necessary to raise this form to specific rank. At present such a course could not be substantiated.

Mr. Lamb does not appear to have realised in his original description, the full significance of certain features of taxonomic value, and, as a consequence, my description will be found to differ considerably from that given by him, and at the same time, to be directly opposed in a number of salient points.

Type :—In the Queensland Museum, Brisbane.

ii. DESCRIPTION AND NOTES ON THREE LIZARDS.

1. *ŒDURA MONILIS*, *de Vis*.

(Pl. III, fig. 2.)

Œdura monilis, *de Vis*., Proc. Linn. Soc., N.S.W. (2), ii, 1888, p. 812.

Head oviform, depressed (in the figured specimen the occipital region is convex and rather swollen). Snout as long as the distance between the eye and the ear opening, once-and-two-thirds to almost twice as long as the orbital diameter. Ear opening very small, one-third to almost half the diameter of the eye, sub-oval, very oblique. Rostral rectangular, the outer angles rounded by the nasal opening, half or a little less as high as broad, with a distinct median cleft above dividing it for barely half its height. Supranasals in contact; nostrils bordered by the rostral, first upper labial, a supranasal, and three post-nasal granules; behind these the granular scales of the snout are not visibly enlarged. Labials $\frac{9-10}{10-11}$. Head covered with hexagonal, sub-equal granules, smallest on the nape.

Mental shield slightly broader than the adjoining sub-labials, truncate, and tapering posteriorly. Scales of body flattened and mostly hexagonal, those of the middle of the back larger than those of the sides, but if anything, slightly smaller than those of the ventral surface. Limbs moderate. Tail rounded, tapering, covered by rings of quadrangular, brick-like scales. (The tail of the figured specimen is reproduced.) An enlarged, flattened granule laterally on the base of the tail. Seven to nine preanal and femoral pores in a series scarcely interrupted medially.

Colour (spirits):—Light yellowish (faded) or greyish-brown above, with seven or eight pairs of ocelli (the fellows of each pair sometimes contiguous) of dark purplish-brown. The most anterior of these in the form of a half-moon-shaped nuchal mark. A dark line from the nostril to the occiput; another short one medially on the snout. Upper-labials yellowish. Upper surfaces of head and body covered (except for the ocelli) by delicate purplish reticulations or spots. Tail when intact, with three or four ocelli, but when reproduced it is irregularly streaked and spotted with purplish. Under-surfaces uniform yellowish.

Measurements of figured example:—

Length of body, snout to anus	78 mm.
Length of tail	42 mm.
Length of head	22 mm.
Width of head	14 mm.
Length of fore-limb	22 mm.
Length of hind-limb	28 mm.

Localities:—There are four specimens of this gecko in the Museum collection. One was collected by Mr. D. A. Porter at Tamworth, Northern Tableland, New South Wales; another was presented to the Trustees by Dr. S. J. Johnston, B.A., and was taken at Trangie, Western New South Wales. Two other very old, poorly conditioned examples are without data.

It is best not to regard this species as a local variety of its better known ally, *Ædura tryoni*. The colouration is characteristic and constant, while several other minor characters distinguish the two. Also, Mr. Porter has forwarded a specimen of a typical *Ædura tryoni* from Tamworth, a locality from which *Æ. monilis* is known.

2. CALOTES CRISTATELLUS, *Kuhl.*

Calotes cristatellus (Kuhl.), Barbour, Mem. Mus. Comp. Zool. Harvard., 1912, xliv.

To the long list of localities in the East Indies from which this species is recorded by Barbour (see above) must be added Dutch New Guinea. In the Museum Collection are ten specimens from "North West New Guinea, presented to the Trustees in 1889 by Captain Strachan."

3. GONYOCEPHALUS SPINIPES, *A. Dum.*

A young specimen which is referred to this species with some doubt comes from Ourimbah, near Gosford, about 40 miles north of Sydney, New South Wales. This extends the range of the widely dispersed genus *Gonyocephalus* about two hundred miles southwards. The extension of the East Indian genus *Gonyocephalus* into New South Wales contrasts markedly with the distribution of other Papuan migrants such as *Rana papua*, *Austrochaperina*, and *Tropidophorus*, which remain confined to the north-east coast of Queensland.

 iii. ON A NEW CHELODINA FROM AUSTRALIA,
WITH A KEY TO THE GENUS.

(Plate IV.)

CHELODINA INTERGULARIS, *sp. nov.*

Carapace not depressed, evenly arched, oval, broadest at a line drawn through the middle of the fourth vertebral shield. No vertebral groove in the adult. Shields and bones with a network of anastomosing grooves. Third to seventh marginal shields of each side with weakly deflexed margins. Nuchal shield large, a little broader than long. First vertebral shield only as large as the second; it is 1mm. broader and 1mm. shorter than the second. Plastron a little more than twice as long as broad, broadly rounded anteriorly and feebly bayed between the gulars, considerably narrower than the carapace in that region; posterior lobe deeply bayed behind, and constricted in the region of the femoro-anal suture; about as wide as the anterior lobe, and a little more than half the greatest width

of the carapace ; the longest plastral shield is the intergular which is once-and-three-quarters as long as broad, longer than the pectorals, once-and-three-quarters as long as the suture of the pectorals, almost as long as its distance from the femorals ; it separates the gulars anteriorly, forming the median portion of the periphery of the anterior lobe. Humerals considerably larger than the gulars. The pectoral shields and their suture are slightly longer than the femorals and their suture. Suture between the abdominal shorter than that of any other pair of shields, twice-and-one quarter in the length of the intergular. Suture between the anals as long as that between the femorals. Depth of body twice-and-two-thirds in the total length. Soft parts, limbs and head absent.

Measurements in millimetres. Taken with callipers :—

Total length of carapace	..	..	192 mm.
Greatest width of same	..	..	132 mm.
Length of plastron, along median line..			142 mm.
Width of plastron, medially	..	..	72 mm.

Described from a single specimen consisting of a carapace and plastron, mostly devoid of shields. On the label is the somewhat vague locality "Australia ?"

Type :—In the Australian Museum, Sydney. Reg. No. R. 6255.

This new form combines the characters of several species. The outline is nearest to that of *C. expansa**, but in the condition of the first vertebral and the anal shields it approaches *C. novæ-guinææ*.† The nuchal shield and contour are much the same as in *C. siebenrocki*‡. From all the species of the genus, however, it is at once distinguished by the remarkable intergular shield, which completely separates the gulars anteriorly. In this character and in the condition of the first vertebral shield it approaches *Pseudemydura umbrina*,|| Siebenrock. In the genus *Chelodina* the condition exhibited by the intergular in this species is approached only by *C. oblonga*,§ in which species it

* Boulenger :—Brit. Mus. Cat. Chel., 1889, p. 216.

† Boulenger :—*l.c.* p. 215, pls. v.-vi.

‡ Werner :—Verh. Zool.-bot. Ges. Wien., Vol. 51, 1901, p. 602, tab. 5.

|| Siebenrock :—Anz. Akad. Wiss. Wien., No. 22, 1901, pl. 1., and S.B. Akad. Wiss. Wien., Vol. exvi, 1907, p. 1207, Tab.

§ Boulenger :—*l.c.* p. 216.

sometimes almost separates the narrow gulars, but the elongate form and the size of the first vertebral shield of the latter enable us to easily distinguish the two forms. In the genus *Emydura* the intergular always separates the gulars, but in that genus the humerals meet behind it and form an extensive suture. The first vertebral too, is not broader than the second. I have no hesitation, however, in placing such a globose form in the genus *Chelodina*. The key here given serves to show the relationships of the seven species.

Key to the species of the genus *Chelodina*:—

- A. Intergular more than twice as long as the suture between the pectorals.
- B. Front lobe of plastron much narrower than the carapace.
Suture between the anals twice as long as that between the pectorals and humerals, which are equal. *C. novæ-guinææ*, Blgr.
Suture between anals a little longer than that between the femorals, but much longer than that of the pectorals.
C. steindachneri, Sbnrk.*
- B.B. Front lobe of plastron nearly as wide as the front lobe of carapace. *C. longicollis*, Shaw.
- A.A. Intergular not twice as long as the suture between pectorals.
- C. First vertebral shield markedly broader than second.
Gulars in contact.
- d. Plastron (without bridge) twice as long or less than twice as long as broad.
Second and third vertebrae longer than broad. *C. expansa*, Gray.
Second and third vertebrae broader than long. *C. siebenrocki*, Werner.
- dd. Plastron more than twice as long as broad.
Second and third vertebrae considerably longer than broad. *C. oblonga*, Gray.
- C.C. First vertebral shield as long as and as broad as second. Gulars separated by the intergular.
C. intergularis, Fry.

* Siebenrock:—K. Ak. Wiss. Wien (Math-naturw.) Anz. No. xviii. 1914, p. 1.

iv. DESCRIPTIONS OF TWO NEW SPECIES OF
PSEUDELAPS, AND A KEY TO THE GENUS.

I. PSEUDELAPS CHRISTIEANUS, *sp. nov.*

(Text fig. 6.)

Size moderate, habit moderate, tail rather stout. Head slightly distinct from neck; eye much larger than its distance from the mouth; rostral twice as broad as deep, plainly visible from above; internasals two-thirds the length of the præfrontals; præfrontals contained once-and-two-thirds in the length of the frontal, the lower posterior corner just in contact with the third labial; frontal much broader in front than behind, once-and-one-fifth as long as broad, three-quarters the length of the parietal, nearly as long as its distance from the tip of the snout, more than twice as broad as the small supraocular; nasal entire,

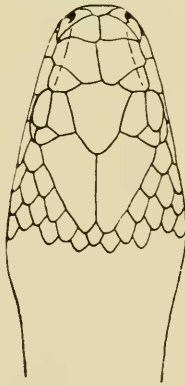


Fig. 6.—*Pseudelaps christieanus*. Drawn from type. Enlarged.

widely separated from the præocular, and separated from each other anteriorly by a backward projection of the rostral; præocular single, in contact with the front edge of the frontal; two postoculars; temporals 2+2, lower anterior wedged in between 5th and 6th upper labials; six upper labial, third and fourth entering the eye; seven or eight lower labials, the first four in contact with the anterior chin shields which are longer than the posterior. Scales smooth, highly polished, in 17 rows. Ventrals, 165; anal divided. Sub-caudals in 38 pairs.*

* The very tip of this tail appears as though it might be injured, in which case the above count will be slightly below what it should be.

Colour (spirits):—Scales of upper-surface fawn-brown, each with a yellow centre; on the sides of the body the scales are only brown edged, the row next to the ventrals not coloured. Upper-surface of head rich chocolate brown. A broad nuchal band of yellowish in which area the scales are spotted with brown; behind this, dark brown fading to the colour of the back. Upper-lips and under-surfaces creamy white.

Total length of type 255 mm.

Length of tail 45 mm.

Localities:—A single adult specimen from Port Darwin, Northern Territory, North Australia. This specimen formed part of a number of collections forwarded by Mr. Hugh W. Christie, Lighthouse-keeper, at Point Charles, and which I hope to deal with subsequently.

P. christianus, Mihi, is easily distinguished from *P. diadema*, Schlegel, by having 17 rows of body scales, a larger eye, a narrower snout and frontal shield, and by having the præocular shield forming an extensive suture with the anterior edge of the frontal; this suture is of about the same extent as that between the præfrontal and frontal, an unique condition. In *P. diadema* the præocular in one or two cases just touches the antero-lateral angle of the frontal, the suture being immeasurably small, but quite the typical form is that in which it is separated from the frontal, the supraocular forming a suture with the præfrontal. When compared side by side, the narrower snout of my new species is a noticeable feature. Instead of the head being glossy black and the nuchal spot sharply defined as in *P. diadema*, it is brownish, the nuchal collar being spotted with the same colour.

In the British Museum Catalogue of Snakes, Dr. Boulenger records *P. diadema* from "North Australia"; perhaps this specimen belongs to *P. christianus*, which at a cursory glance might be mistaken for that species. Messrs. Lönnberg and Andersson* however, mention a specimen which they refer to *P. diadema* from Western Australia, which undoubtedly belongs to this species. I think it quite possible that the true *P. diadema* does not occur in Western Australia.

* Lönnb. and Anderss. :—Kongl. Sv. Vet. Handl. Bd. 52, No. 3, 1913, p. 14.

2. PSEUDELAPS MINUTUS, *sp. nov.*

(Text fig. 7.)

Size very small; habit moderate, tail short, tapering. Head slightly distinct from neck; eye much larger than its distance from the mouth; rostral a little broader than deep, visible from above; internasals shorter than the præfrontals, the latter contained twice or a little more in the length of the frontal; frontal once-and-three-quarters to twice as long as broad, broadest behind, shorter than the parietals, longer than its distance from the tip of the snout, about as broad as or a little broader than the supra-ocular; nasal entire, in contact with the præocular; nostril small; præocular single; two postoculars; tem-

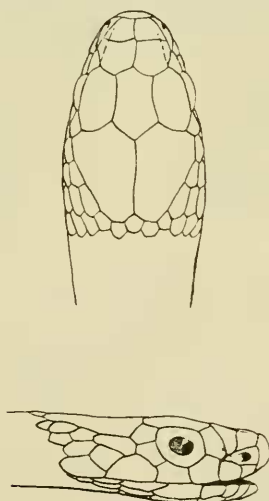


Fig. 7.—*Pseudelaps minutus*, Fry. Drawn from type. Enlarged.

porals 2 + 2, lower anterior wedged in between 5th and 6th upper labials, in one specimen united with the sixth on both sides of the head; six upper labials, third and fourth entering the eye; six lower labials, anterior four in contact with anterior chin shields, which are longer than the posterior. Scales in 15 rows, quite smooth, with a dull sheen. Ventrals 148-153; sub-caudals single, 51-59, tail terminating in a long cylindrical pointed scale. Anal entire.

Colour (spirits):—Dark olive or black above, all the scales with minute punctations of olive grey. Head black, uniform or covered with grey speckles most profuse on the sides and lips where the black ground colour is proportionately at a minimum; sometimes a dark streak on the canthus. A curved yellowish nuchal collar. Chin and throat blackish, speckled with grey. Ventrals yellowish, not black bordered, but dark and light spotted on the outer ends. Under-surface of tail darker than body.

Total length of type	..	..	..	155 mm.
Length of tail	..	..	..	30 mm.

Localities:—Three specimens which, although very small, do not appear to be young snakes. One was collected and presented to the Trustees by Mr. Thos. Steel, F.L.S., and comes from Wilde's Meadow, near Moss Vale, eighty miles south of Sydney, New South Wales; another was presented by Mr. A. H. S. Lucas, M.A., and is from one of two localities, Tamworth or Guntawang, but the donor is not certain which; the third is from Colo Vale, south of Sydney, New South Wales, presented by Mr. J. Summers.

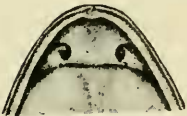
Type:—In the Australian Museum, Sydney, Reg. No. R.3971.

This species is probably one of the smallest snakes known. It appears to be adult or very nearly so when six inches long. It is allied to *P. krefftii*, Gthr., from which it differs in the temporals being 2+2, the narrower frontal, greater number of sub-caudals, entire anal shield, and colouration. The following is a key to the species of the genus *Pseudelaps*:—

- A. Nasal in contact with or narrowly separated from the præocular.
 - B. Nasal Shield divided.
 - Temporals 2+2. *P. mulleri*, Scheg.
 - Temporals 1+2. *P. squamulosus*, D. & B.
 - B.B. Nasal shield entire.
 - C. Temporals 2+2. Sub-caudals 51-59. Anal entire. A yellow occipital mark. *P. minutus*, Fry.
 - C.C. Temporals 1+2. Sub-caudals, 26-38. Anal divided. Ventrals 146-156. *P. krefftii*, Gthr.
 - Ventrals 167-172. *P. fordii*, Krefft.
 - Ventrals 176-193. *P. harriettae*, Krefft.
- A.A. Nasal widely separated from the præocular. Temporals 2+2.
 - Scales in 15 rows. *P. diadema*, Schleg.
 - Scales in 17 rows. *P. christieanus*, Fry.



Lechriodus melanopyga, Doria.



Phanerotis fletcheri, Blgr.

